The Monopolizing Fruit

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Introduction

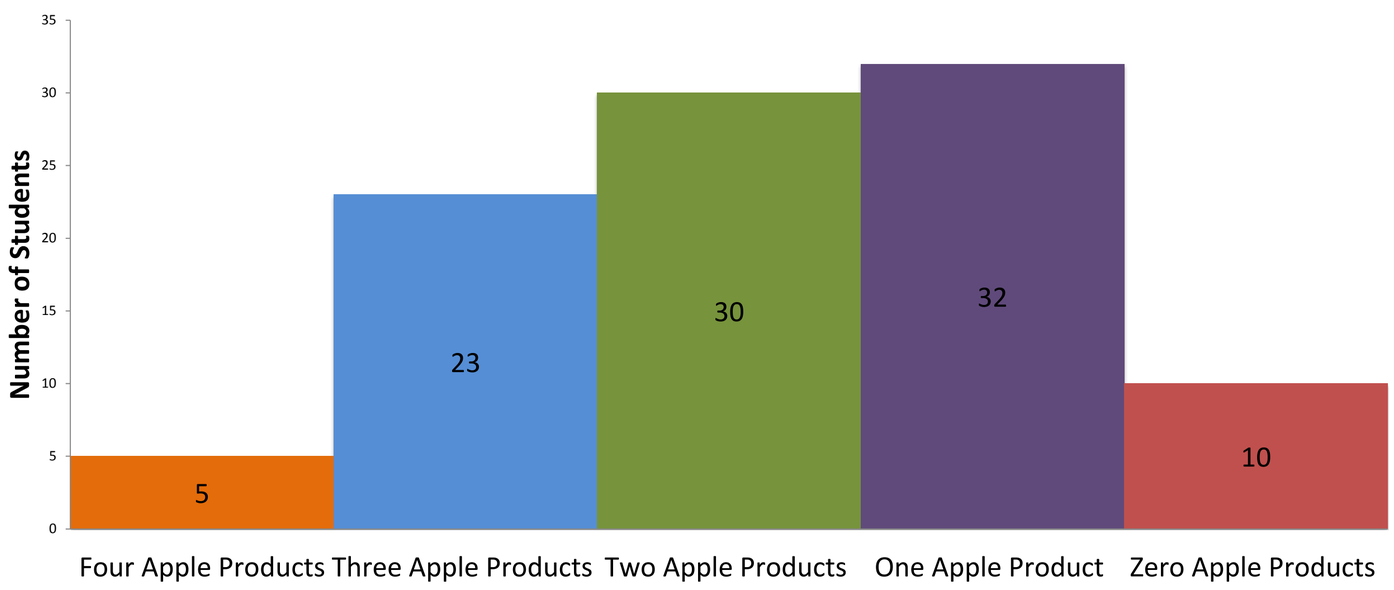
According to recent reports, USA Today claims that about half of the United States population owns on average 1.6 Apple products ranging from iPhones, iPads, iPods, and Mac computers. In order to test this hypothesis, a convenience study was conducted to validate the findings. In this study, a random selection of fifty male and female college students were asked how many Apple products they owned. This data was used to quantify a statistical analysis in attempt to refute or fail to refute USA Today's claim.

Methods of Analysis

- **Sources of Data:** A survey was administered to the first fifty male and female students that entered the main lobby of the Bodine residence hall at the University of Bridgeport.
- **Variables:** Every student was asked their gender, age, how many Apple products they owned, and how many hours on a scale 1-10 are they using their products on average.
- **Types of analysis:** Histograms, box plot, summary statistics, normality tests, 95% confidence intervals, and hypothesis testing with a t-test using a 0.05 level of significance (JMP 10, SAS Institute Inc.).

Results

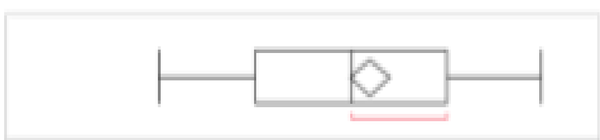
Number of Students with Apple Products



Summary Statistics

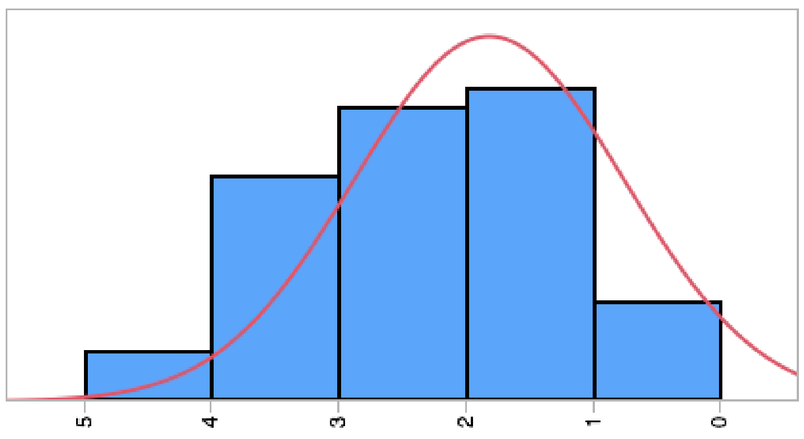
Mean	1.81
Median	2
Mode	1
Range	-4
Standard Deviation	1.060731594
Mid-Range	2
Max Usual Value	3.931463189
Min Usual Value	-0.311463189
Upper 95% Mean	2.0204722
Lower 95% Mean	1.5995278
Sum (N)	100

Box Plot



With 95% confidence, the sample's mean is between 1.60 and 2.02. Considering this, the claim according to USA Today that the average number of Apple products owned per person is 1.60 has a 0.95 probability of containing the sample's mean. This concludes that there is a 95% confidence that the true mean contains values between 1.60 and 2.02 meaning the claim made by USA Today could very well be accurate.

Normality Test



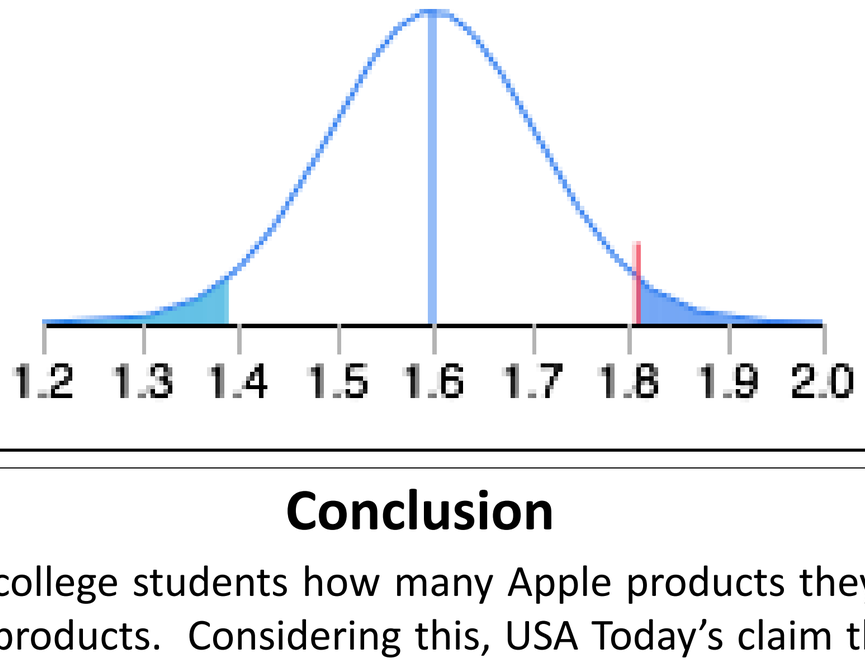
Mean	1.81 = 2
Median	2
Skewness	0.1310818
Kurtosis	-0.700095
25th Percentile	1
75th Percentile	3

Normally distributed data will exhibit a mean equal to the median, 25th and 75th percentiles about the same distance from the median, a centered histogram, skewness about 0, and kurtosis less than 3. According to the normality tests it was determined the data is normally distributed.

T Test

The Hypothesis

H_0: μ = 1.60 (Claim)
H_1: μ ≠ 1.60
Level of Significance (α) = 0.05
n = 100
$\bar{x}$ = 1.81
μ = 1.60
Prob > |t| = 0.051



H_0 will fail to be rejected because the p-value (0.05) is equal to the level of significance (α = 0.05). This implies that there is NOT sufficient evidence to reject the H_0 claim that the average amount of Apple Products owned per person is 1.6 according to USA Today.

Conclusion

After asking 50 random male and female college students how many Apple products they own and calculating data, it is concluded that a person owns on average 1.8 Apple products. Considering this, USA Today's claim that the average number of Apple products owned by a person on average is 1.6 is not much different from the calculated mean 1.8. After conducting a hypothesis test, it was determined that USA Today's claim failed to be rejected because the computed p-value results of 0.05 were equal to the level of significance (α = 0.05). This means that USA Today's claim that a person owns on average 1.6 Apple products could be very well true. The claim could neither be determined completely true nor was it falsified from the data.

Acknowledgements

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